AMENDMENTS TO THE SPECIFICATION:

The following amendments are to the substitute specification filed September 13, 2001.

Please amend the paragraph beginning at page 2, line 17, as follows:

Fig. 10 shows a refractive index of the PTG film formed on the surface of the silicon substrate and a sheet resistance of the dopant element diffusion layer (n layer) after the film formation, relative to the substrate temperature employed for the formation of the PTG film according to the prior art. This film has a refractive index of about 1.6 to about 2.0. The atmospheric pressure CVD method can form a film having a uniform thickness. The PTG film functions as an ARC by interference. When the PTG film is heated at 900°C in a nitrogen atmosphere for 30 minutes, the sheet resistance of the n layer is 50 to 500 <u>Ω/□</u> [[Ω/●]] (square). A solar cell adapted to a module can be obtained when the sheet resistance is not greater than 100 <u>Ω/□</u> [[Ω/●]] (S13).

Please amend the paragraph beginning at page 4, line 17, as follows:

When a phosphorus diffusion layer (dopant element diffusion layer) having a sheet resistance value of 50 to 100 <u>Ω/□</u> [[Ω/●]] is formed by the method of producing a solar cell described in Japanese Unexamined Patent Publication No. HEI 8(1996)-085874 as shown in Fig. 10, the refractive index of the resulting PTG film is from 1.6 to 2.0.

Please amend the paragraph beginning at page 10, line 22, as follows:

The sheet resistance value is preferably from 30 to 100 <u>Ω/□</u> [[Ω/●]]. The refractive index is preferably from 2.2 to 2.5 in a region having a low dopant element concentration. The dopant element concentration in the heated titanium oxide film is preferably 80% or less in that of the dopant element diffusion layer.

Please amend the paragraph beginning at page 13, line 19, as follows:

In the apparatus shown in Fig. 3, the silicon substrate 1 is first pre-heated by a pre-heater 2 and conveyed by a conveyor belt 3 to a film formation position 13. In the film formation position 13, a heater 4 sets the film formation temperature. The titanium compound and the compound of the dopant element, both in a gaseous state, are passed through gas lines <u>8 and 7</u> ~~7 and 8~~, respectively, and supplied to the surface of the silicon substrate 1 from a dispersion head 5. The titanium compound and the compound of the dopant element thus supplied are thermally decomposed on the surface of the silicon substrate 1, forming a titanium oxide film. In the apparatus shown in Fig. 3, the conveyor belt 3 conveys the silicon substrate 1 from the position immediately below the discharge port of the dispersion head 5 for the compound of the dopant element, through the position immediately below the discharge port of the gas line 8 for the titanium compound to the position immediately below the discharge port for the atmospheric gas of the gas line 9.

Please amend the paragraph beginning at page 19, line 1, as follows:

[Table 1]

	refractive index	sheet resistance (Ω/□ [[Ω/●]])
prior art	1.9	105
this example	2.5	60

Please amend the three consecutive paragraphs that begin at page 19, line 7, as follows:

As shown in Table 1, the refractive index of the PTG film of this example was 2.5 and the sheet resistance value of the n layer of the silicon substrate 1 formed of the PTG film was 60 Ω/□ [[Ω/●]]. The refractive index of the prior art PTG film was 1.9 and the sheet resistance value of the n layer formed of the PTG film on the surface of the silicon substrate 1 was 105 Ω/□ [[Ω/●]].

Here, the sheet resistance value of the n layer had to be kept below about 100 Ω/□ (preferably not greater than about 60 Ω/□ [[Ω/●]]) to prevent the drop of a fill factor caused by the increase of the loss of a series resistance owing to the increase of a contact resistance when a grid electrode was formed by using a silver paste. The sheet resistance value of the PTG film according to the prior art was 100 Ω/□ [[Ω/●]] or more. Therefore, unless titanium oxide was deposited on the PTG film by CVD method or the like, the surface reflection could not be reduced effectively.

This example could form the dopant element diffusion layer and the reflection preventing film that satisfied the sheet resistance value of the n layer of 30 to 100 <u>Ω/□</u> [[Ω/●]] and the optimum refractive index of 2.2 to 2.5 that were necessary for the solar cell for the module.

Please amend the paragraph beginning at page 20, line 8, as follows:

Table 2 shows the refractive indices of the PTG films of Example 2 and the sheet resistance values of the n layers of the silicon substrate 1 formed from the respective PTG films.

[Table 2]

phosphorus compound	refractive index	sheet resistance value <u>Ω/□</u> [[Ω/●]]
diethyl phosphate	2.5	60
trimethyl phosphate	2.2	30
triethyl phosphate	2.3	64
trimethyl phosphite	2.2	43
triethyl phosphite	2.3	65
tripropyl phosphite	2.3	68

triisopropyl phosphite	2.5	72

Please amend the two consecutive paragraphs beginning at page 20, line 24, as follows:

As shown in Table 2, the refractive index of each PTG film using the phosphorus material was 2.2 to 2.5 and the sheet resistance value of the n layer of the silicon substrate 1 formed from the PTG film was 30 to 72 <u>Ω/□</u> [[Ω/●]].

Therefore, the phosphorus materials described above could be used for the production of the PTG film. The n layer having a sheet resistance value of 30 to 100 <u>Ω/□</u> [[Ω/●]] and the reflection preventing film having the optimum refractive index of 2.2 to 2.5, that were required for the solar cell for the module, could be produced.

Please amend the three consecutive paragraphs beginning at page 21, line 13, as follows:

Table 3 shows the refractive indices of the boron-containing titanium oxide films and the sheet resistance values of the p layers of the silicon substrates 1 formed of the boron-containing titanium oxide films.

[Table 3]

boron compound	refractive index	sheet resistance <u>Ω/□</u> [[Ω/●]]
trimethoxyboron	2.3	68
triethoxyboron	2.3	69

triisopropoxyboron	2.4	67

As shown in Table 3, the refractive index of each boron-containing titanium oxide film formed of the boron materials was 2.3 to 2.4, and the sheet resistance value of the p layer of the silicon substrate 1 formed of each boron-containing titanium oxide film was 67 to 69 Ω/□ [[Ω/●]].

Therefore, the boron materials described above could be used for the production of the boron-containing titanium oxide film. The p layer having a sheet resistance value of 30 to 100 Ω/□ [[Ω/●]] and the optimum refractive index of 2.2 to 2.5, that were necessary for the solar cell for the module in which glass and EVA were disposed on the light incident surface, could be formed.

Please amend the two consecutive paragraphs beginning at page 24, line 1, as follows:

[Table 5]

Experiment No.	refractive index	sheet resistance Ω/□ [[Ω/●]]
T1	2.5	60
T2	1.8	n layer was not formed
T3	2.5	60
T4	1.8	n layer was not formed
T5	2.5	30

Experiments Nos. T1, T3 and T5 satisfied the conditions that the refractive index of the PTG film was 2.2 to 2.5 and the sheet resistance value of the n layer of the silicon substrate 1 formed of the PTG film was 30 to 100 Ω/□ [[Ω/●]] in Table 5. The result proved unaltered between the case where the dispersion head 5 shown in Fig. 4 was used alone and the case where the dispersion head was divided as shown in Figs. 5 and 6.

Please amend the paragraph beginning at page 25, line 10, as follows:

Fig. 7 shows the refractive indices of the PTG films after heat-treatment and the sheet resistance values of the n layers of the silicon substrate 1 formed from the respective PTG films with respect to the difference B – A of the distances immediately below the dispersion head. The films were formed by setting several kinds of differences B – A of the distances immediately below the dispersion head. It was found that the conditions satisfying the refractive index of 2.2 to 2.5 of the PTG film and the sheet resistance value of 30 to 100 Ω/□ [[Ω/●]] of the n layer of the silicon substrate 1 formed from the PTG film were 0.1 to 30 mm.

Please amend the paragraph beginning at page 25, line 29, as follows:

Thus, by setting the difference B – A of the distances to 0.1 to 30 mm, the n layer having a sheet resistance value of 30 to 100 Ω/□ [[Ω/●]] and the reflection preventing film having an optimum refractive index within the range of 2.2 to 2.5, required for the

solar cell for the module, that included glass and EVA on the light incident surface, could be formed.

Please amend the paragraph beginning at page 26, line 16, as follows:

Several kinds of differences B – A of the distances were set and the films were formed. As a result, the difference B – A of the distances of 0.5 to 15 mm satisfied the refractive index of the PTG film of 2.2 to 2.5 and the sheet resistance value of 30 to 100 <u>Ω/□</u> [[Ω/●]] of the n layer of the silicon substrate 1 formed from the PTG film. In all the cases, however, the sheet resistance value of the n layer was higher than when the partition 10 was provided. Furthermore, as the difference B – A of the distances immediately below the dispersion head became greater, the thickness of the PTG film tended to become smaller.

Please amend the paragraph beginning at page 27, line 1, as follows:

Thus, it became clear that when the partition 10 was not disposed, the formation of the n layer having the sheet resistance value of 30 to 100 <u>Ω/□</u> [[Ω/●]] and the reflection preventing film having the optimum refractive index within the range of 2.2 to 2.5 necessary for solar batteries for module became more difficult in comparison with Example 5.

Please amend the two consecutive paragraphs beginning at page 28, line 1, as follows:

[Table 7]

Experiment No.	refractive index	sheet resistance Ω/□ [[Ω/●]]
T1	2.5	60
T6	2.5	60
T7	1.8	n layer was not formed
T8	1.8	n layer was not formed

As shown in Table 7, the requirement for the refractive index of the PTG film of 2.2 to 2.5 and the sheet resistance value of 30 to 100 Ω/□ [[Ω/●]] of the n layer of the silicon substrate 1 formed from the PTG film could be satisfied when the substrate 1 was conveyed from a position immediately below the discharge port of the gas line 7 for the dopant element compound of the dispersion head 5, through a position immediately below the discharge head of the gas line 8 for the titanium compound and to a position immediately below the discharge port of the gas line 9 for the atmospheric gas. No influences could be observed by the sequence of the gas lines 7 and 8.